

**REMARKS**

Claims 1-3 and 5-20 are pending.

Claims 1-3 and 5-20 stand rejected.

Claims 1 and 14 have been amended. Support for these amendments can be found throughout the specification and drawings, as originally filed.

This response is submitted in response to a final office action and is deemed to place the application in a condition for allowance, or alternatively, in better condition for appeal.

**35 USC §103(a) REJECTION**

Claims 1-3, 5-11, 13-17 and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,834,535 to Abu-Isa et al. in view of U.S. Patent No. 5,643,999 to Lee et al.

The Applicant respectfully traverses the 35 U.S.C. §103(a) rejection of claims 1-3, 5-11, 13-17 and 19.

The standard for obviousness is that there must be some suggestion, either in the reference or in the relevant art, of how to modify what is disclosed to arrive at the claimed invention. In addition, "[s]omething in the prior art as a whole must suggest the desirability and, thus, the obviousness, of making" the modification to the art suggested by the Examiner. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 U.S.P.Q.2d (BNA) 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988). Although the Examiner may suggest the teachings of a primary reference could be modified to arrive at the claimed subject matter, the modification is not obvious unless the prior art

also suggests the desirability of such modification. *In re Laskowski*, 871 F.2d 115, 117, 10 U.S.P.Q.2d (BNA) 1397, 1398 (Fed. Cir.1989). There must be a teaching in the prior art for the proposed combination or modification to be proper. *In re Newell*, 891 F.2d 899, 13 U.S.P.Q.2d (BNA) 1248 (Fed. Cir. 1989). If the prior art fails to provide this necessary teaching, suggestion, or incentive supporting the Examiner's suggested modification, the rejection based upon this suggested modification is error and must be reversed. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d (BNA) 1566 (Fed. Cir. 1990).

The law is also clear that a claim in dependent form shall be construed to incorporate all the limitations of the claim to which it refers. 35 U.S.C. 112, fourth paragraph.

In the interests of expediting prosecution of the instant application, and without admission that any amendment is required, the Applicant has amended claim 1 to recite, among other things, an intumescent fire retardant system for use in polymeric moldings, comprising, on the basis of 100 parts by weight blended mixture of a polymer component comprising: (1) 20-45 parts of a polymeric binder comprising high density polyethylene having a density in the range of 0.940-0.970 g/cm<sup>3</sup> and an  $\alpha$ -olefin-containing copolymer having a density in the range of 0.870-0.910 g/cm<sup>3</sup>, **wherein the  $\alpha$ -olefin-containing copolymer is present in the range of about 1 to 30 parts**; (2) 5-25 parts of a nitrogenous gas-generating agent selected from the group consisting of amines, ureas, guanidines, guanamines, s-triazines, amino acids, salts thereof, and mixtures thereof, wherein the salts are selected from the group consisting of phosphates, phosphonates, phosphinates, borates, cyanurates, sulfates and mixtures thereof; (3) 10-35 parts of a water vapor-generating agent; (4) 1-5 parts of an

antioxidant; and (5) 0-15 parts of a reinforcing agent, wherein the system is essentially halogen-free.

In the interests of expediting prosecution of the instant application, and without admission that any amendment is required, the Applicant has amended claim 14 to recite, among other things, an intumescent fire retardant system for use in polymeric moldings, comprising, on the basis of 100 parts by weight blended mixture: (1) 20-45 parts of a polymeric binder comprising high density polyethylene having a density in the range of 0.940-0.970 g/cm<sup>3</sup> and an  $\alpha$ -olefin-containing copolymer having a density in the range of 0.870-0.910 g/cm<sup>3</sup>, ***wherein the  $\alpha$ -olefin-containing copolymer is present in the range of about 1 to 30 parts***; (2) 15-25 parts of a nitrogenous gas-generating agent selected from the group consisting of an ammonium salt, a melamine salt, or mixtures thereof, wherein the salts are selected from the group consisting of phosphates, phosphonates, phosphinates, borates, cyanurates, sulfates and mixtures thereof; (3) 20-30 parts of a water vapor-generating agent selected from the group consisting of hydrated magnesia, hydrated alumina, intercalated graphite, and mixtures thereof; (4) 1-5 parts of an antioxidant selected from the group consisting of distearylthiodipropionate, a hindered phenol, and mixtures thereof; and (5) 3-10 parts of a reinforcing agent selected from the group consisting of glass fibers, mica, titanium oxide and mixtures thereof, wherein the system is essentially halogen-free.

Neither Abu-Isa et al. or Lee et al., either alone or in combination therewith, disclose or suggest such systems as claimed in independent claims 1 and 14 or the claims dependent therefrom.

The Examiner correctly noted that Abu-Isa et al. is silent with respect to the use of a polyolefin copolymer or thermoset moldings. The claims, as previously amended as well as presently amended, make clear that the  $\alpha$ -olefin-containing copolymer is indeed present in the claimed formulation, as opposed to the Examiner's assertion. There is ample support in the specification for the recitation of the  $\alpha$ -olefin-containing copolymer (see paragraphs [0007], [0013], [0015], and Table 1 (e.g., Formulation 1)) in amounts up to 30 parts (on the basis of 100 parts by weight). The Applicants are unsure why the Examiner purposely chose to cite a single **exemplary** embodiment of the  $\alpha$ -olefin-containing copolymer being present in the range of 0-15 parts for the proposition that the  $\alpha$ -olefin-containing copolymer was optional, while ignoring all of the other bases for support that  $\alpha$ -olefin-containing copolymer was not optional.

The Examiner apparently cited Lee et al. to cure the deficiencies in the disclosure of Abu-Isa et al. However, the disclosure of Lee et al. is also deficient as well.

Specifically, Lee et al. is directed to an elastomeric adhesive or tie layer for bonding the component layers of plastic packaging and the like. The polyethylene blend disclosed by Lee et al. is comprised almost entirely of low density or very low density polyethylene polymers. Although Lee et al. appears to disclose that up to 1% by weight of a high density polyethylene at a density above 0.935 may be used; even Lee et al. acknowledge that the functionality of the elastomeric adhesive composition degrades rapidly to the point where the formulation is no longer useful. In fact, Lee et al. specifically teaches that any high density polyethylene above 2% by weight is "specifically excluded" and its presence "has a disastrous effect." Therefore, one of ordinary skill in the art would not see this teaching by Lee et al. as a motivation to

combine an ingredient that “has a disastrous effect” into the high density polyethylene formulation taught by Abu-Isa et al.

As previously noted, Lee et al. appears to be in direct conflict with Abu-Isa et al. in that it specifically teaches that the high density polyethylene component is to be kept to an extremely low level, and ideally, should not be present at all. Additionally, as the Examiner has previously acknowledged, Abu-Isa et al. does not disclose the use of an olefin copolymer, as presently claimed. Thus, one of ordinary skill in the art would not have any motivation to look to Lee et al. for guidance on the polymeric binder as presently claimed, or any motivation to modify Abu-Isa et al. as suggested by the Examiner.

Furthermore, Lee et al. is directed to elastomeric adhesives and does not disclose or suggest that these adhesives, or any component thereof including the polyolefin copolymer, can be used in weight bearing or heavy duty structural applications, such as moldable objects, such as pallets, especially those that possess intumescent properties. The Applicants are using the  $\alpha$ -olefin-containing copolymer to improve impact strength (e.g., see paragraph [0013]), as opposed to improving adhesion. Adhesion is no longer an issue with the present invention, as the articles themselves are formed of intumescent materials, thus obviating the need for various prior art intumescent paints and coatings, which may have suffered from adhesion problems. Thus, the issue of whether it is known that  $\alpha$ -olefin-containing copolymers are useful to improve the adhesion of resin binders, as asserted by the Examiner, is irrelevant to a determination of whether  $\alpha$ -olefin-containing copolymers are useful in improving impact strength in intumescent polymeric moldings.

Additionally, even assuming *arguendo* that Lee et al. did disclose the polyolefin copolymer composition as recited in the instant claims, which it does not, it would appear that one of ordinary skill in the art, seeing that Lee et al. discloses an elastomeric adhesive, would assume that the polyolefin copolymer would only be used in conjunction with the elastomeric compositions disclosed by Abu-Isa et al. As the Examiner has already acknowledged, if elastomeric compositions are used by Abu-Isa et al., both a high density polyethylene and a chlorinated (i.e., halogenated) polyethylene must be used together. There is no teaching of a non-halogenated elastomeric composition by Abu-Isa et al. Conversely, the instant claims recite an essentially halogen-free system. Thus, it is unclear to the Applicant how the combination of Abu-Isa et al. and Lee et al. can produce an essentially halogen-free system.

Thus, one of ordinary skill in the art would not look to Abu-Isa et al. and/or Lee et al., either alone or in combination therewith, for guidance on an essentially halogen-free intumescent fire retardant thermoplastic moldable composition, as presently claimed.

Because claim 1 is allowable over Abu-Isa et al. and/or Lee et al., either alone or in combination therewith, for at least the reasons stated above, claims 2, 3, 5-11, and 13, which depend from and further define claim 1, are likewise allowable. Because claim 14 is allowable over Abu-Isa et al. and/or Lee et al., either alone or in combination therewith, for at least the reasons stated above, claims 15-17 and 19, which depend from and further define claim 14, are likewise allowable.

Accordingly, the Applicant contends that the 35 U.S.C. 103(a) rejection of claims 1-3, 5-11, 13-17 and 19 has been overcome.

### **DOUBLE PATENTING REJECTION**

Claims 1-3 and 5-20 stand provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-35 of co-pending Application No. 10/771,972.

The Applicant respectfully traverses the non-statutory obviousness-type double patenting rejection of claims 1-3 and 5-20.

In the interests of expediting prosecution of the instant application, and without admission that any terminal disclaimer is required, the Applicant previously submitted a terminal disclaimer and the requisite fee in the previously filed response to the Office Action mailed February 6, 2006. The Applicant understands that the double patenting rejection will be maintained until such time as the terminal disclaimer is approved by the PTO.

### **CONCLUSION**

In view of the foregoing, the Applicant respectfully requests reconsideration and reexamination of the Application. The Applicant respectfully submits that each item raised by Examiner in the Final Office Action of November 2, 2006 has been successfully traversed, overcome or rendered moot by this response. The Applicant respectfully submits that each of the claims in this Application is in condition for allowance and such allowance is earnestly solicited.

The Examiner is invited to telephone the Applicant's undersigned attorney at (248) 723-0487 if any unresolved matters remain.

Any needed extension of time is hereby requested with the filing of this document.

The Commissioner is authorized to charge any additional fees or credit any overpayment to Deposit Account No. 08-2789. A duplicate copy of this letter is enclosed herewith for this purpose.

**Respectfully submitted,**

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**Date**

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